

# Science Advisory Panel for Marine Spatial Planning

September 16, 2014



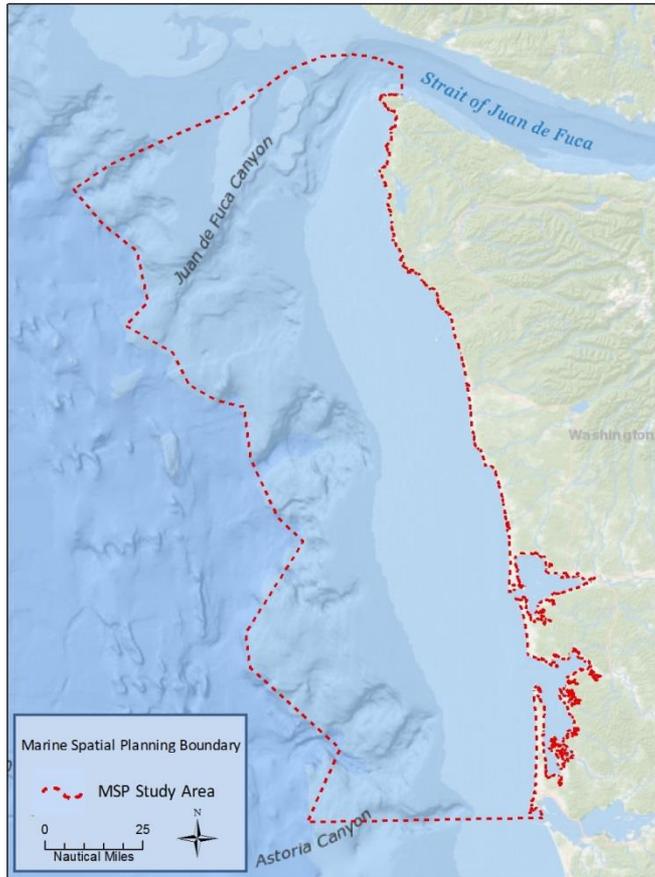
# Marine Spatial Planning Context for the Science Advisory Panel

September 16, 2014

Katrina Lassiter  
*Washington Department of Natural Resources*

Jennifer Hennessey  
*Washington Department of Ecology*

# Scope of MSP



INTENT:  
Address location of potential new marine uses.

- PLAN GOALS/OBJECTIVES:
- Protect existing uses
  - Protect cultural uses/resources
  - Preserve environment
  - Integrate decision-making
  - Provide new economic opportunities

**NON-REGULATORY PLAN**



The study area is 700 fathoms offshore and includes federal waters and estuaries.

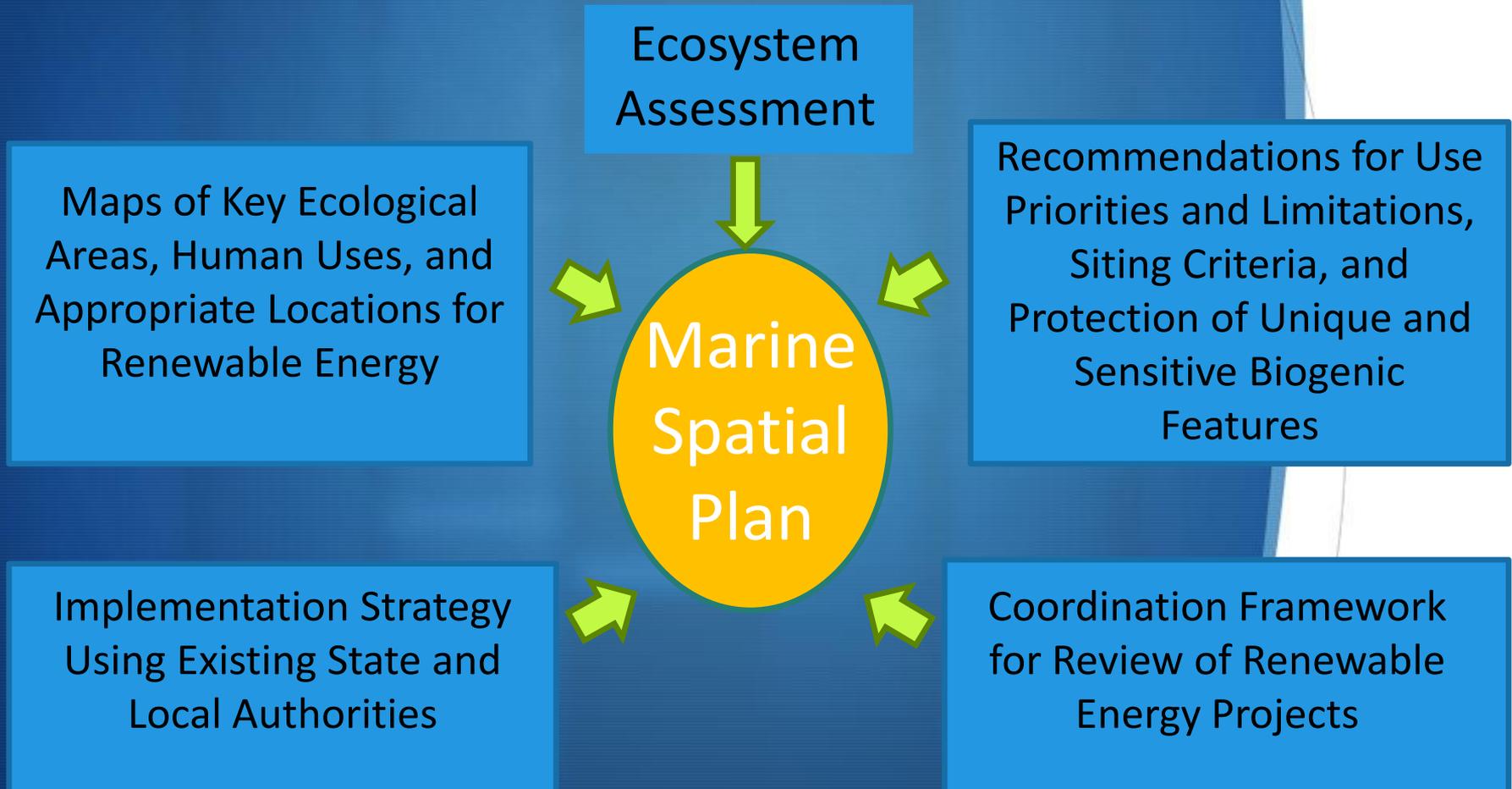
# What does the state expect to gain from the MSP process?

- Better baseline information and ecosystem indicators
- Analyses to support decision-making
- Recommendations for new uses
  - Siting – ID areas to avoid and suitable areas
- Implementation framework across agencies
  - Integration of other existing policies and management
  - Adaptive management strategy

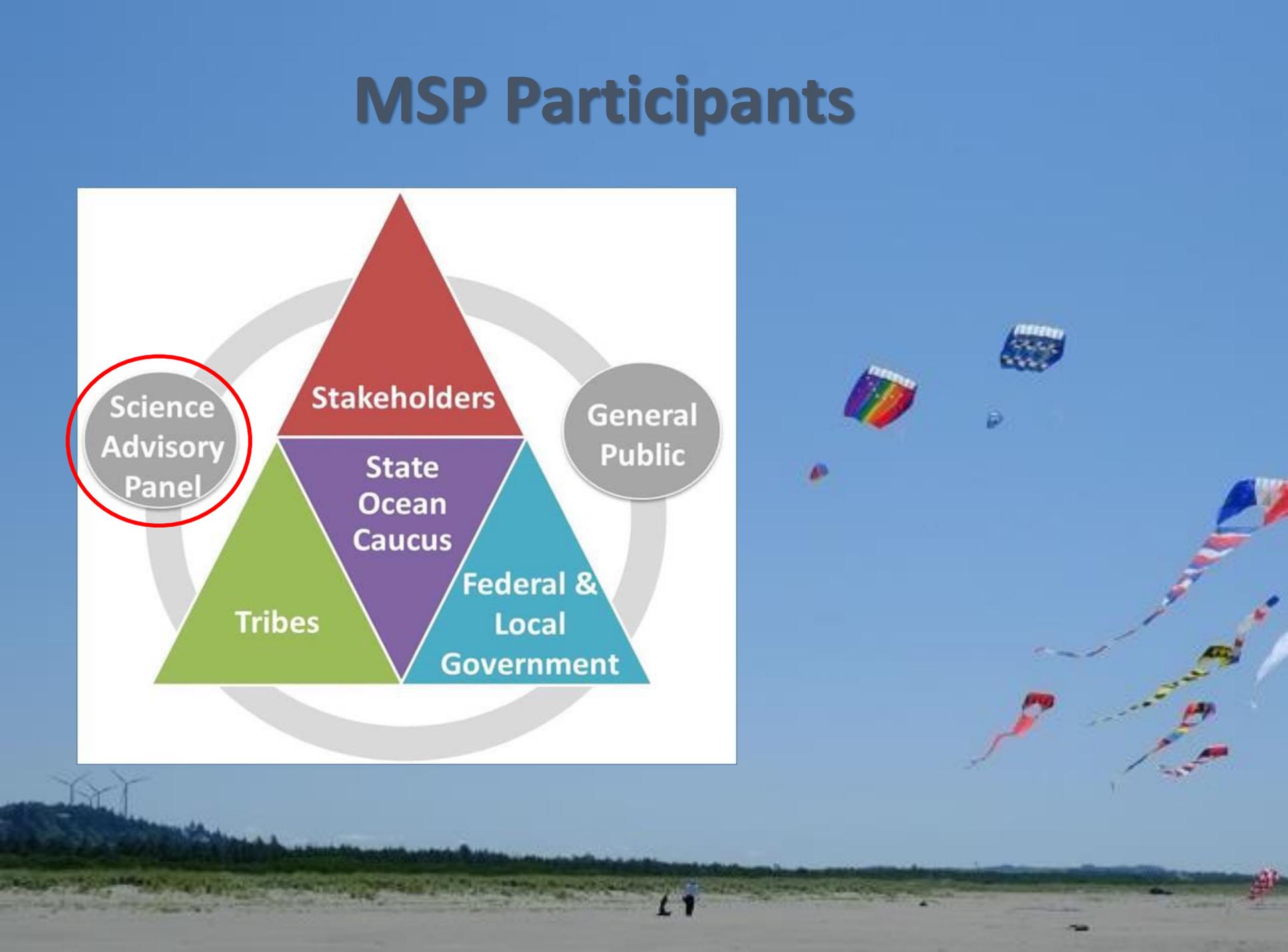
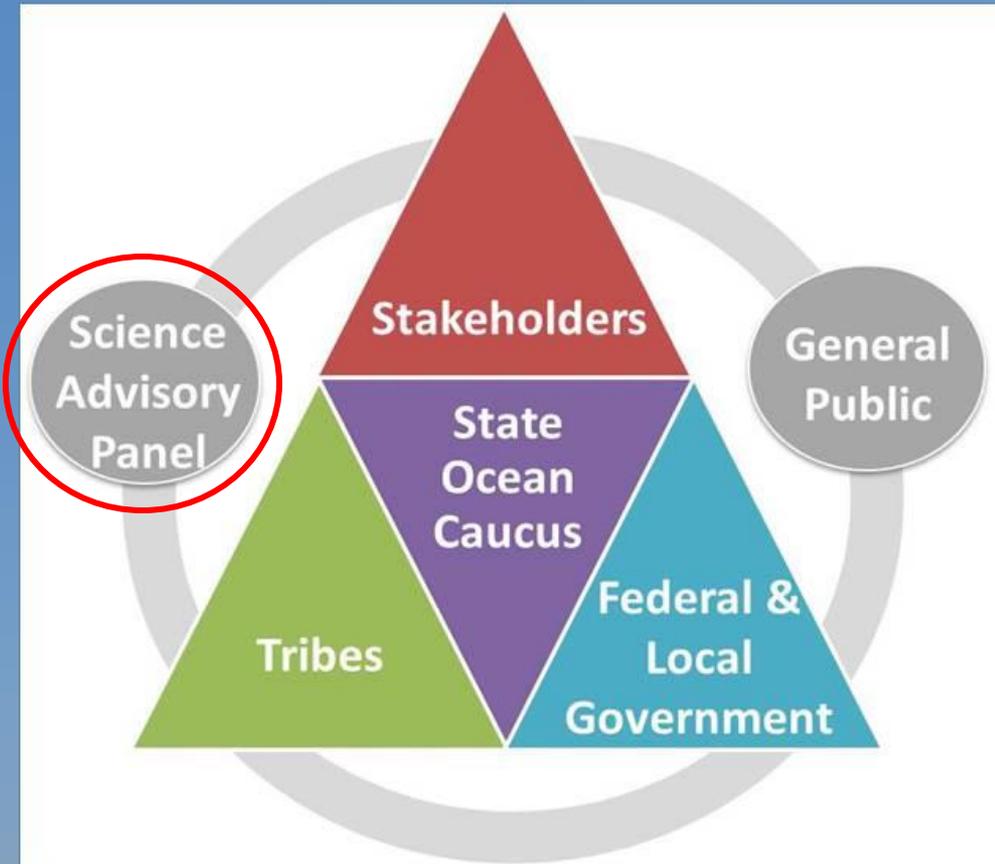


# MSP Context: RCW 43.372.040

(6) The marine management plan must include but not be limited to...



# MSP Participants



# Draft MSP Process Timeline

Stakeholder involvement, tribal consultation, government coordination and public input throughout process

Stage 1:  
Pre-Planning  
(June 2013)

Stage 2:  
Understanding  
Impacts  
(July 2013-  
Dec. 2014)

Stage 3:  
Developing  
the Plan  
(July 2014-  
Sept. 2015)

Stage 4:  
Finalizing the  
Plan  
(July 2015-  
Dec. 2016)

Evaluation of benthic habitat data  
Assessment of economic analysis methods  
Review of ecologically important areas project

Review of final draft ecological indicators  
Review of social and economic indicators



# Further questions?

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# Introduction to Science Panel

- ◆ Bridget Trosin, WA Sea Grant

# Purpose and Formation

- ◆ Need for scientific review
- ◆ Used in all other marine spatial plans
- ◆ Identify priority projects/data to review through a scoping process
- ◆ Identified experts based on project/data subject review requests, experts are renowned in area of study, knowledge of Washington coastal resources and context, willing to participate

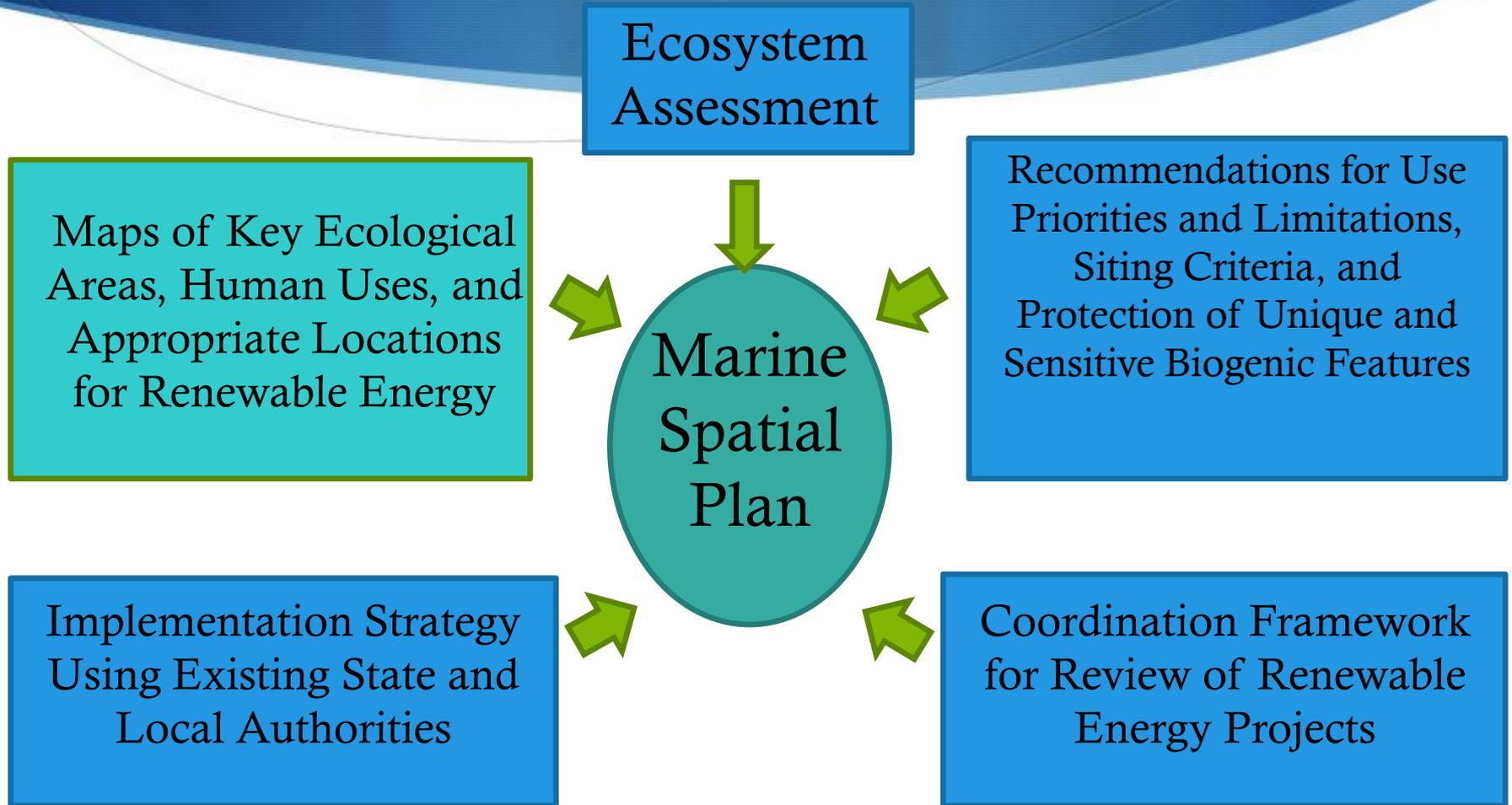
# Proposal to Identify Ecologically Important Areas

*Revised – August 2014*



## MSP Context: 43.372.040

6) The marine management plan must include but not be limited to...



“RCW 43.372.040(6)(c)... A series of maps that, at a minimum, summarize available data on:

The key ecological aspects of the marine ecosystem, including physical and biological characteristics, as well as areas that are environmentally sensitive or contain unique or sensitive species or biological communities that must be conserved and warrant protective measures....”



Ecologically  
Important  
Areas

# Proposed Process

- Oct-Dec 2014  
Science  
Develop an Initial  
Areas  
Work with Federal Agencies, Tribes, and  
Panel on Use of Available Data to  
Map of Ecologically Important
- Feb 2015  
WCMAC Work Session to Review Initial Map, Data  
Used and Assumptions, and Provide Feedback
- Feb-Mar 2015  
Tribes  
Alternatives  
Overlay Map of Ecologically Important Areas with  
PNNL's Energy Siting Maps, Review Maps with  
and Solicit Feedback, and Model Energy
- Apr 2015  
WCMAC Work Session to Review  
Energy Alternatives and Provide Feedback
- May-Jun 2015  
Work with WCMAC and Tribes to Modify  
Alternatives, as needed, and Finalize Report

# Next Steps

- Meet with Tribes on Proposed Process and Timeline to Examine Available Data of Ecologically **Sensitive** Areas
  - Physical and Biological Information; Life History Characteristics; Migratory Patterns
  - Fish and Wildlife Surveys (Primarily Presence/Absence)
    - *Note: If Fishery Independent Surveys are Not Available, Will Use Fishery Logbook Data as a Proxy*
  - Habitat Surveys—Bottom Habitat and Biogenic Data
- Produce an Initial Map of Ecologically **Sensitive** Areas
- Meet with Science Panel, Tribes, Other Scientists, and WCMAC to Develop Criteria (if possible) to Potentially Assign Value to **Sensitive** Areas (i.e., Convert **Sensitive** to “**Important**”)
  - May be as Simple as “More is Better,” Depending on Data Availability

# Benthic Habitat Review

## Science Advisory Panel Role

### The questions

What were methods used to develop these models?

How do these data compare to other approaches to habitat classification?

What are the strengths/weaknesses of modeling based on varied data?

### The data

TNC developed a benthic habitat dataset that is based on modeled information of seafloor habitats.

Consider the following questions:

- Should the state be using these modeled data?
- Is there better data available?
- Should the state rely on raw data that it has?
- What are strengths and limitations of modeled benthic habitat data?

# *IEA-based Social Indicators for Washington Marine Spatial Planning*

Dr. Melissa Poe, *Environmental Social Scientist & Liaison*  
Washington Sea Grant (UW)  
Northwest Fisheries Science Center (NOAA)

*Presentation to the MSP Science Panel Sept 16, 2014*

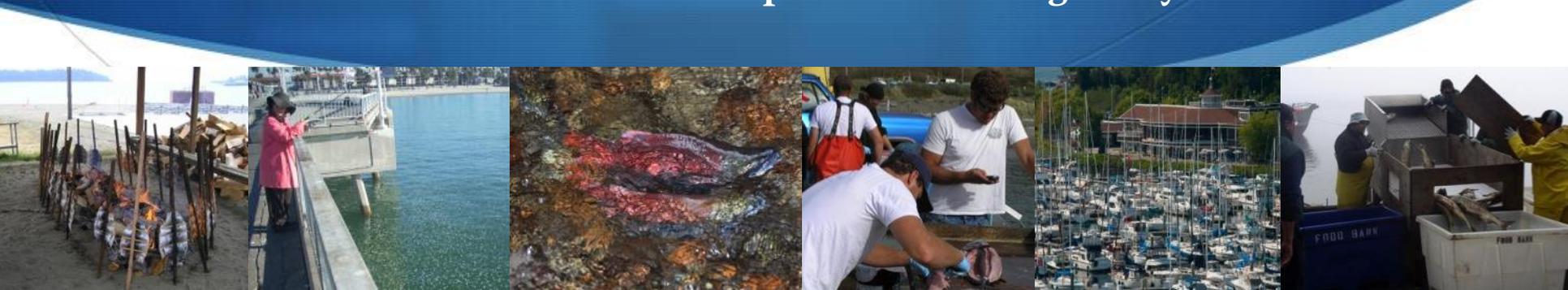


*What is an IEA?*  
*Integrated Ecosystem Assessment*



IEA provides *‘a synthesis and integration of information on relevant physical, chemical, ecological, and human processes in relation to specified management objectives’*

- A tool for EBM
- Required of WA MSP
- Both **natural** and **social sciences**
- Status and trends of **coupled socio-Ecological Systems**



# INTEGRATED SOCIO-ECOLOGICAL SYSTEM OF THE CALIFORNIA CURRENT ECOSYSTEM

## FOCAL ECOSYSTEM COMPONENTS

### Ecological Integrity

Diversity, Seabirds, Marine mammals, Salmon, Forage species, Groundfish, Species interactions



### Human Wellbeing

Conditions, Connections, Capabilities (e.g., safety, community, livelihood)



### Human Activities

(e.g., fishing, farming, mining, recreation, research, education, activism, restoration, management)



## MEDIATING COMPONENTS

### Habitat

Marine, Estuarine, Freshwater



### Local Social Systems

(e.g., laws, policies, economies, institutions, social networks, hierarchies, cultural values, built environment)

## DRIVERS AND PRESSURES

### Climate & Ocean Drivers

(e.g., climate, ocean upwelling)



### Social Drivers

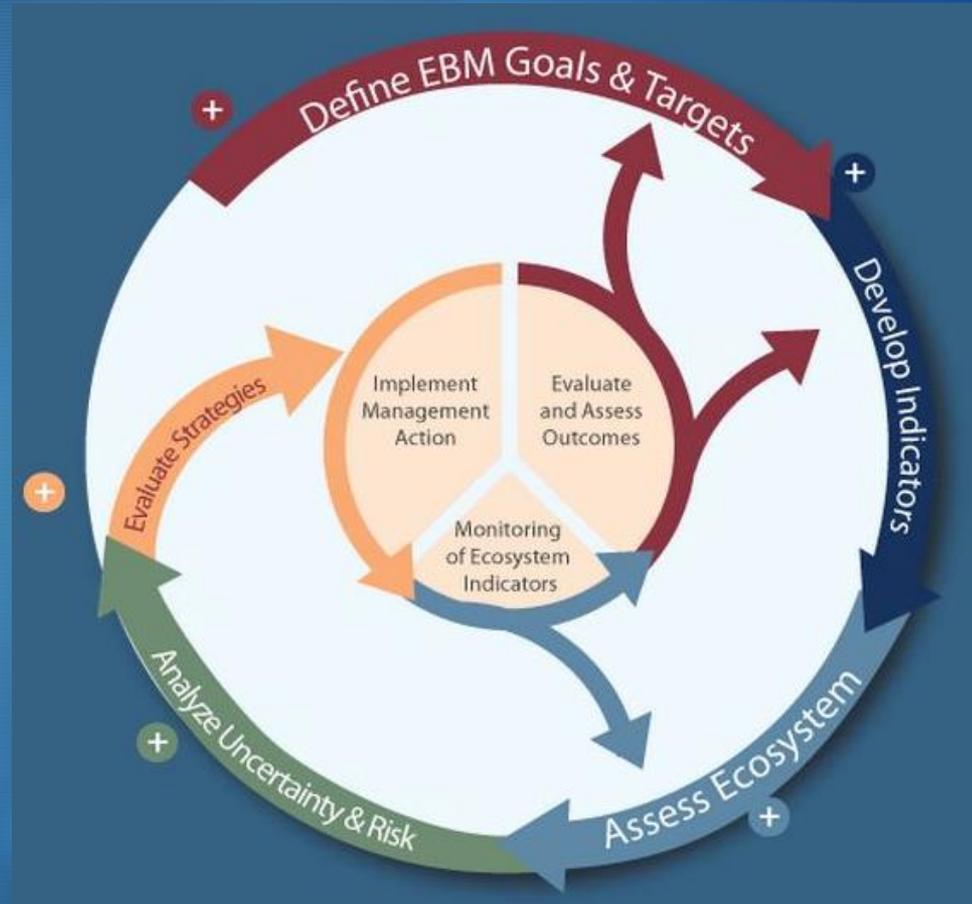
(e.g., population growth and settlement patterns, national and global economic and political systems, historical legacies, dominant cultural values, and class systems)



## *Integrated Ecosystem Assessment Process and Product*

IEAs are Step-wise

- Process and products
- Evaluate management options



# IEA for Washington Marine Spatial Planning Social Indicator Development Process

Develop an IEA-based conceptual model of **social indicators** of human wellbeing for Washington MSP

Conduct a systematic analysis of the **locally relevant goals, values and objectives**

Identify and evaluate a suite of indicators and attributes for assessing human wellbeing for WA MSP



Synthesize **social science** on MSP and rank studies for use in the WA IEA

Appraise the **data availability** of social indicators for WA coast & highlight data gaps



# IEA for Washington Marine Spatial Planning Social Indicator Development Process

Develop an IEA-based conceptual model of social indicators of human wellbeing for Washington MSP

Conduct a systematic analysis of the locally relevant goals, values and objectives

Identify and evaluate a suite of indicators and attributes for assessing human wellbeing for Washington IEA for MSP

## Time Line



Began  
December 2013

Synthesize social science on MSP and rank studies for use in WA IEA  
Prelim Model & Indicators:  
Dec 2014

Appraise the data availability for spatially referenced social indicators for WA coast and highlight data gaps  
Community Outreach & Feedback:  
Jan/ Feb 2015

Deliverables Complete:  
June 2015



Develop an IEA-based conceptual model of **social indicators** of human wellbeing for Washington MSP



*Wellbeing is a state of being with others & the environment, which arises where human needs are met, where individuals & communities can act meaningfully to pursue their goals, & where individuals & communities can enjoy a satisfactory quality of life.*



Synthesize  
**social science**  
on MSP and  
rank studies for  
use in the WA  
IEA



Conduct a systematic analysis of the **locally relevant** goals, values and objectives

Access to Natural Resources

Natural Resource Livelihoods

Aesthetic Beauty & Open Space

Rural Character

Healthy Ecosystems

Tribal & Non-Tribal Communities

Engagement in Decision-Making



Identify and evaluate a suite of indicators and attributes for assessing human wellbeing for WA MSP



Access to Natural Resources

Natural Resource Livelihoods

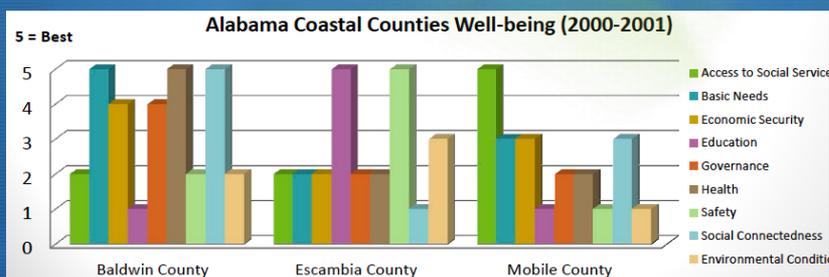
Aesthetic Beauty & Open Space

Rural Character

Healthy Ecosystems

Tribal & Non-Tribal Communities

Engagement in Decision-Making





Thank you!

Questions/Comments?

email: [mpoe@uw.edu](mailto:mpoe@uw.edu)



## Collaborators

### Washington Sea Grant Staff

- Penny Dalton
- Bridget Trosin
- Samantha Macks
- Kevin Decker

### Social Wellbeing Indicators (SWIMM) Team for CCIEA

- Penny Dalton, WA Sea Grant
- Phil Levin, NOAA
- Sara Breslow, NRC/NOAA
- Nives Dolsak, UW
- Karma Norman, NOAA
- Raz Barnea, UW-SMEA
- Brit Sojka, UW-SMEA

### SWIMM Social Science Working Group

- Arun Agrawal, U Michigan
- Xavier Basurto, Duke U
- Courtney Carothers, U Alaska
- Susan Charnley, USFS, Portland
- Sarah Coulthard, Northumbria U
- Jamie Donatuto, Swinomish Tribe
- Carlos Garcia-Quijano, U Rhode Isl.
- Christina Hicks, Ctr Ocean Solutions
- Arielle Levine, San Diego State U
- Michael Mascia, WWF (recent)
- Terre Satterfield, U British Columbia
- Kevin St. Martin, Rutgers U

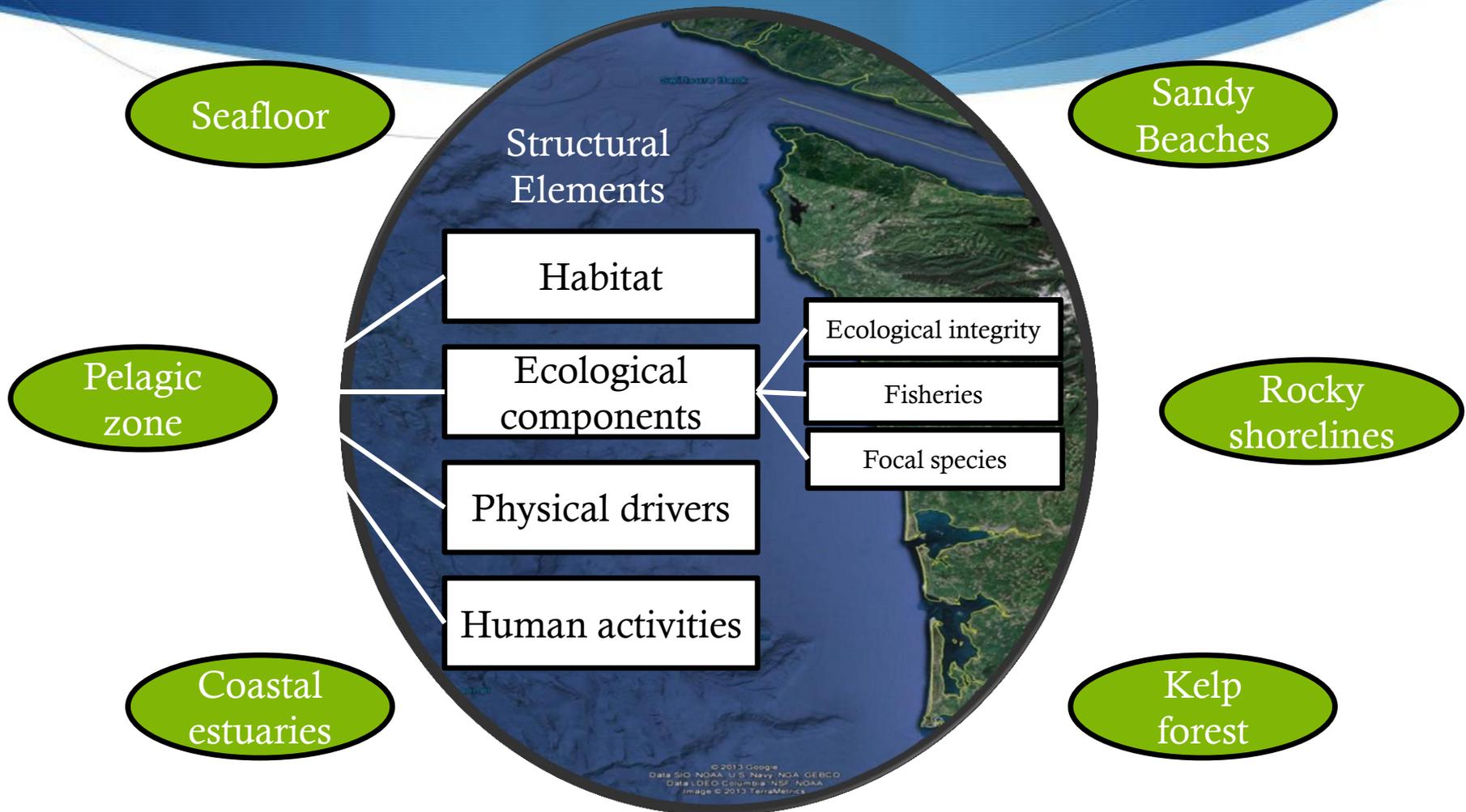


# Ecological Indicators for Washington Marine Spatial Planning

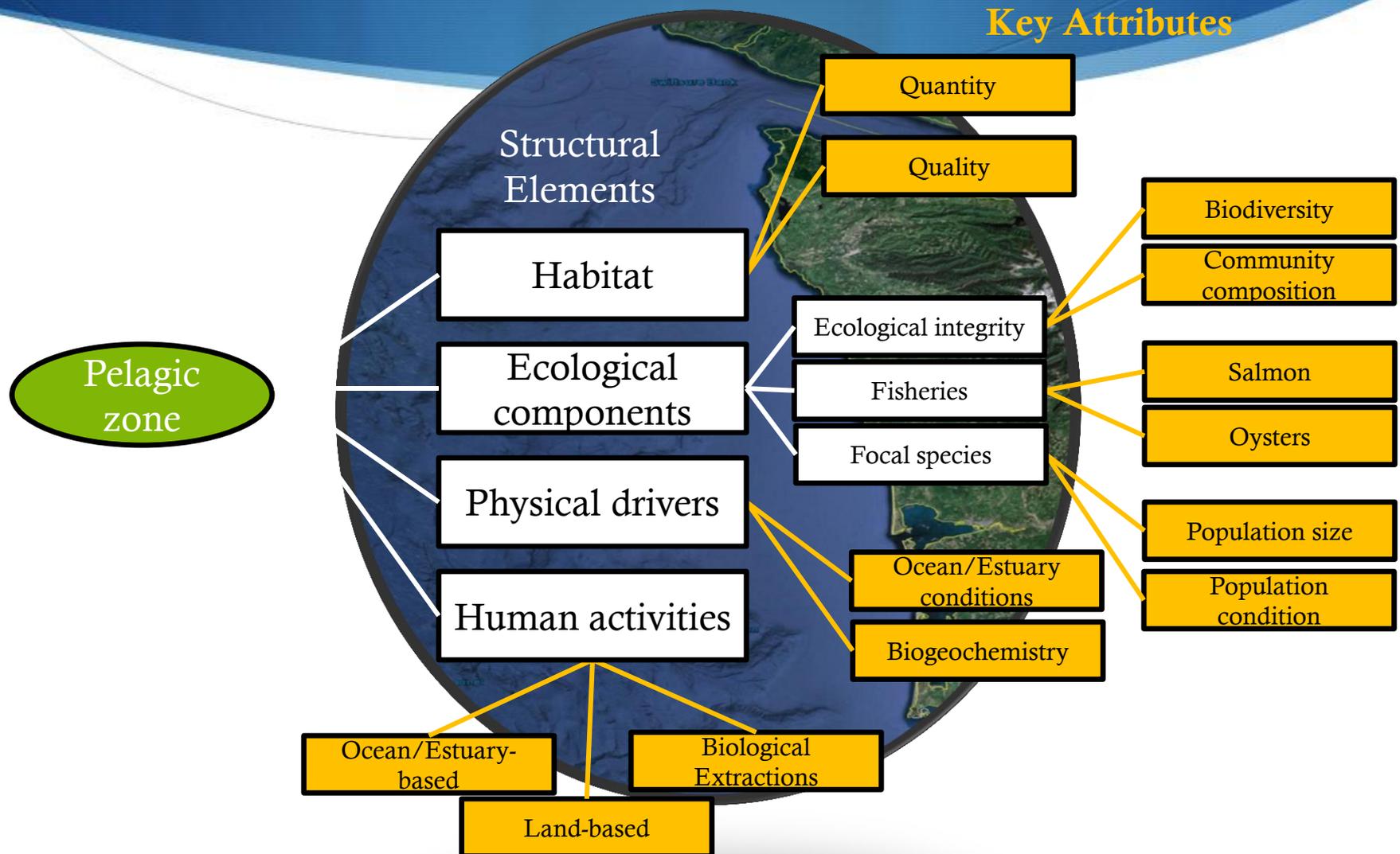
Kelly Andrews, NOAA- NWFSC



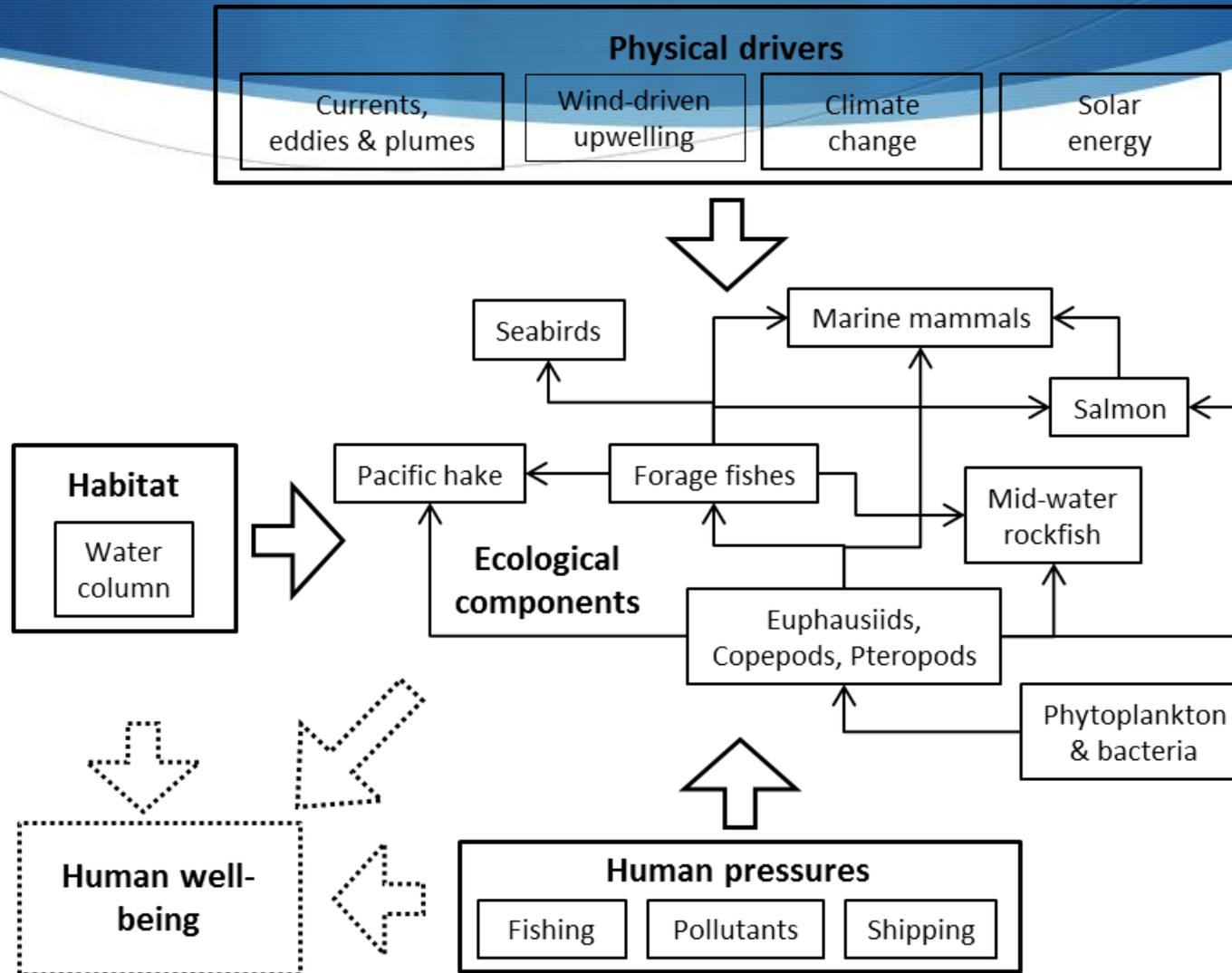
# Conceptual framework of ecological indicators for marine spatial planning



# Conceptual framework of ecological indicators for marine spatial planning



# Conceptual model of Pelagic Habitat



# Step 1: Identify Indicators



**Compile a list of potential indicators that could be used to measure key attributes of each structural element**

Sources of potential indicators:

- **California Current IEA-developed indicators**
- Puget Sound Vital Signs
- OCNMS condition report
- Other West Coast indicator portfolios & indicator development efforts

# Step 2: Screen with criteria

## Indicator Evaluation Criteria (Kershner et al. 2011)

Primary considerations (5)	Data considerations (7)	Other considerations (6)
<ul style="list-style-type: none"><li>• Theoretically sound</li><li>• Relevant to management concerns</li><li>• Responds to changes in attributes</li><li>• Responds to changes in management</li><li>• Linkable to targets</li></ul>	<ul style="list-style-type: none"><li>• Concrete and numerical</li><li>• Historical data</li><li>• Simple</li><li>• Broad spatial coverage</li><li>• Continuous time series</li><li>• Spatial &amp; temporal variation understood</li><li>• Signal-to-noise ratio</li></ul>	<ul style="list-style-type: none"><li>• Understood by the public</li><li>• History of reporting</li><li>• Cost-effective</li><li>• Anticipatory</li><li>• Lagging</li><li>• Compatible (regional, national, international)</li></ul>

Indicators “rated” for each criterion based on information in peer-reviewed literature

# Step 3: Literature-based scoring



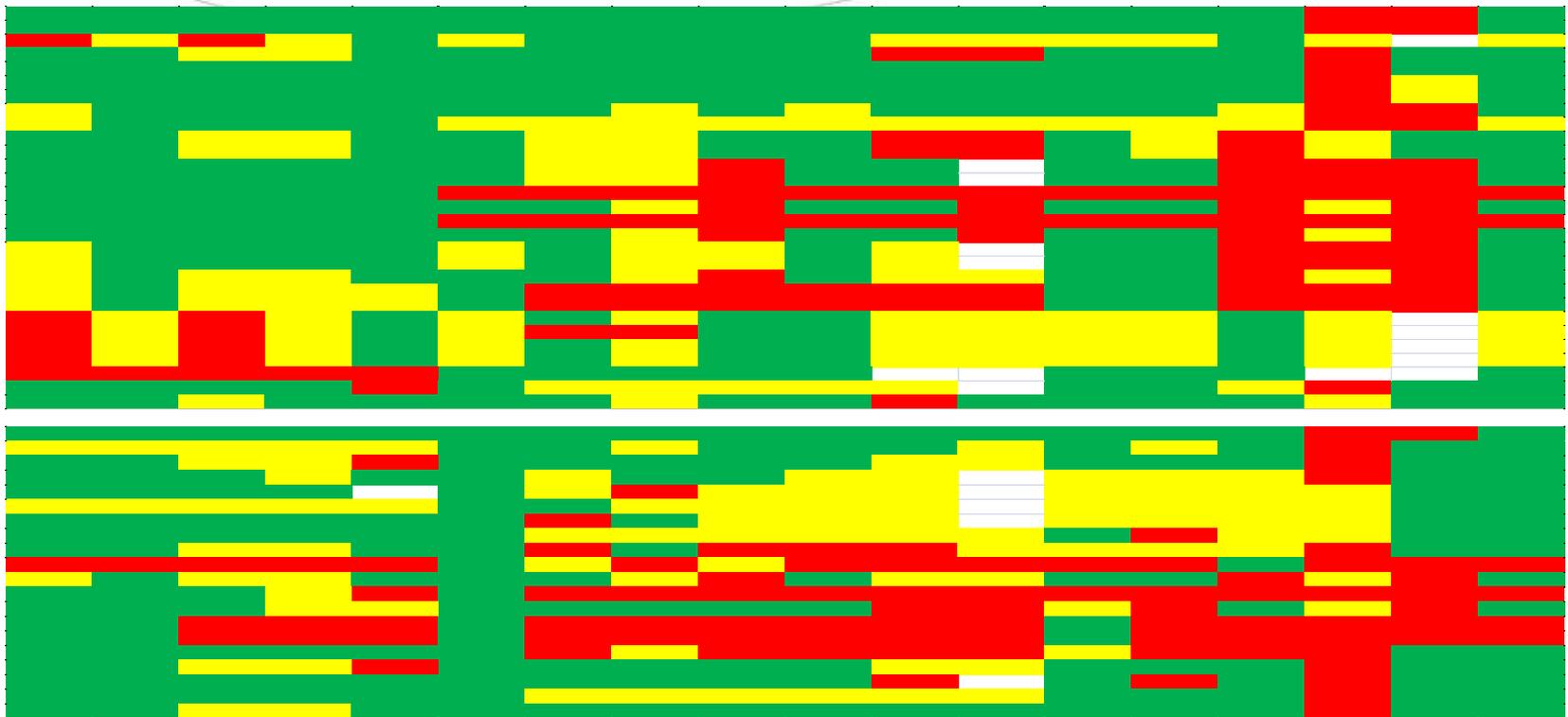
Criteria:

Primary

Data

Other

Indicators



Supported = 1



Ambiguous = 0.5



No support = 0

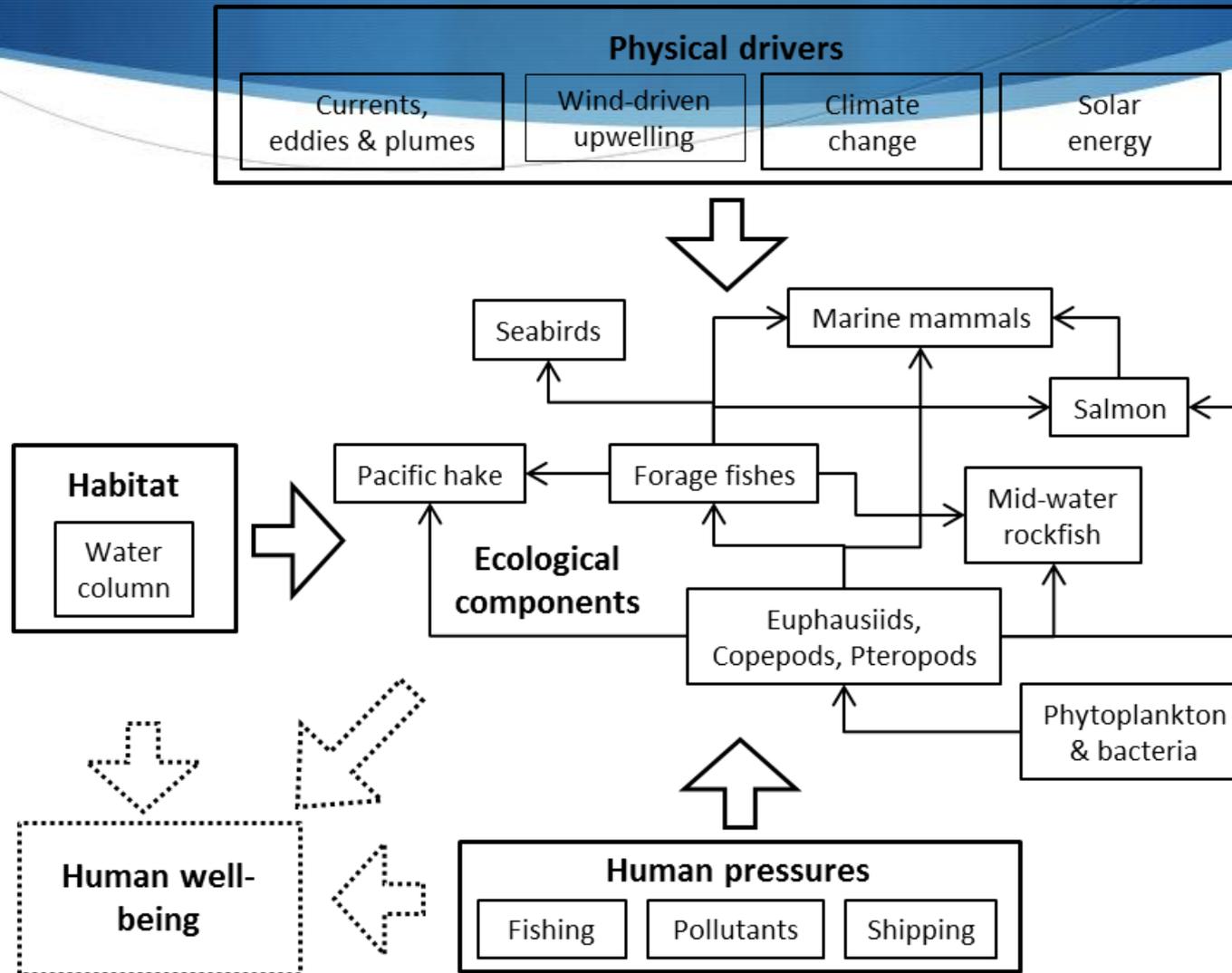
# Step 4: Criteria weighting



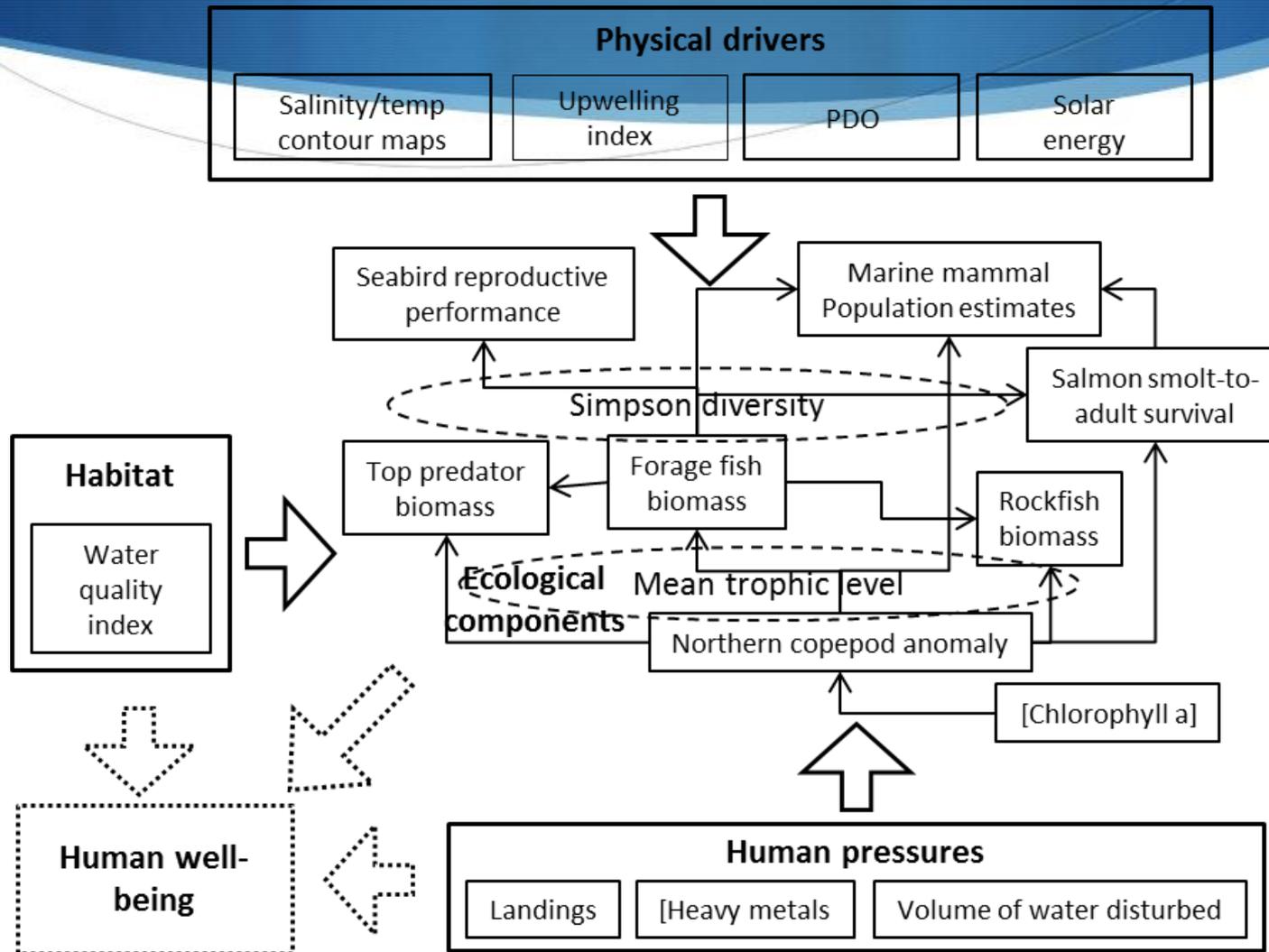
- Weight Evaluation Criteria – not all are equally important
- For California Current IEA we polled managers to get weightings
- For Puget Sound IEA, a mixed science-policy group generate weightings in a workshop setting

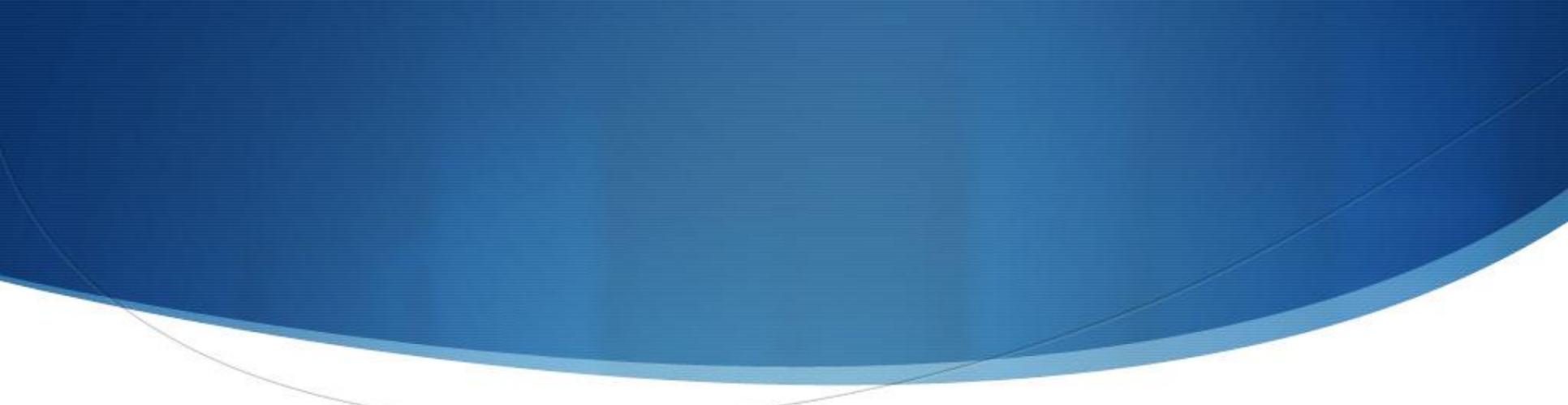
Understood by public and policy makers	Spatial and temporal variation understood	Broad spatial coverage
1	0.25	0.5

# Conceptual model of Pelagic Habitat



# Indicators mapped to conceptual model of pelagic habitat





◆ Kelly Andrews, NOAA- NWFSC

◆ [Kelly.andrews@noaa.gov](mailto:Kelly.andrews@noaa.gov)

# Economic Indicators

◆ Kevin Decker, WA Sea Grant

# What?

- ◆ Provide a comprehensive review of economic indicators that can be evaluated to assess the economic health of a region.
  - ◆ Audience = state agencies
- ◆ Provide an actual economic assessment of each county and of the west coast of WA
- ◆ Address the issue of an economic index

# How can the science panel provide feedback?

- ◆ Provide feedback about the indicators being used.
- ◆ Are these the best indicators available?
- ◆ Are there indicators missing?
- ◆ Are there indicators being used that should be removed
- ◆ What is the best way to present the indicators for use at a state agency?
- ◆ What is the best way to present the indicators for use at the regional level?
- ◆ Is the best method for assessing each of the indicators being used?

# Timeline

- ◆ End of October: Rough draft of economic indicators provided for review
- ◆ End of November: Final draft of economic indicators provided
- ◆ End of March: Rough draft of economic assessments submitted for review and comment
- ◆ End of April: Final draft of economic assessments

# Economic Analysis Review

## The project

Cascade Economics will be conducting an economic analysis for the Washington Coast. As part of a scoping process, they will be proposing which methods of economic analysis they will use.

## Science Advisory Panel Role

- Evaluate the strengths and limitations of the methods proposed by Cascade Economics.
- Communicate with Cascade Economics via email and participate in one phone call.

## Timing

- Cascade Economics will propose its methodologies in early October.
- They will contact you via email in early-mid October and follow up with a phone call.
- We will be asking for your input not later than mid-late October.

# Discussion

- Reimbursement
- Approach to review
- Scheduling meeting on ecologically important areas project review
- Next steps

